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SOME NOTES UPON THE SPHINGIDÆ OF THE UNITED STATES.

BY REV. W. J. HOLLAND, PITTSBURGH, PA.

I am indebted to my esteemed correspondent, Prof. C. H. Fernald, for a copy of his recent Synopsis of the Sphingidæ of New England. I have been greatly pleased with it, and trust that it will meet with that general distribution among the students of our beautiful science which it deserves. In the following lines I wish to present a few observations which the perusal of Prof. Fernald's book suggests.

Hemaris Tenuis, Grote.

Prof. Fernald remarks of this species: "The early stages and food plants are unknown." Presuming that the statement of the learned Professor is warranted by an exhaustive search through the literature of the subject, I shall venture to supply from my own observation what strikes me as a surprising deficiency, since *Hemaris Tenuis* is one of our most abundant species in Western Pennsylvania.

The food plant is the Snow-berry, *Symphoricarpus racemosus*, and I took last fall from one bush of this plant over twenty larvæ. My breeding cages this morning (April 26th) are full of the perfect insects, which, having just emerged from chrysalis, and lost none of the scales which at this stage cover the pellucid parts of the wings, are all of the form "*fumosa*" described by Strecker (Lepidoptera Rhopal. and Heteroceræ, pp. 93, 140). Flown specimens, which abound at the lilacs in the grounds near by, are without the "smoky" appearance which led our Reading savant to apply the name, and show themselves unmistakeably as "clear-wings."

Larva and Chrysalis.—A part of each larval brood is light apple-green in color; a part is reddish brown. This phenomenon is often apparent in the larvæ of the Sphingidæ, and is manifestly not due to the influence of the food plant, as both varieties are found side by side upon

the same plant. The pro-legs and the ventral aspect of the larva are in all cases chocolate brown throughout, deepening almost to black in the reddish brown portion of the brood spoken of above. The legs proper are jet black. The head is round and only partially retractile. The edge of the fleshy fold of the first segment immediately behind the head is minutely granulated with bright yellow. The spiracles are marked by small black spots enclosing two minute white points. The caudal horn is curved forward, and is covered with minute spiny processes. It is black at the tip, the black color extending downward before and behind to the junction with the body, but on either side at the base the horn is bright yellow, gradually fading into the green of the surrounding cuticle.

The larva spins a moderately compact cocoon among dried leaves at the surface of the ground. The silk is deep brown in color. The chrysalis is from seven eighths to nine eighths of an inch in length, smooth, long in proportion to its diameter, tapering to a fine point in the cremaster, and dull black in color.

Hemaris Thysbe, var. *uniformis*, G. & R.

This form is common at Pittsburgh, and prevails altogether at Cresson, Pa., on the summit of the Allegheny Mountains. I have never found it in West Virginia, North Carolina, and Southern Indiana, where I have collected extensively. I have never received it from any of numerous correspondents and collectors south of the Potomac and the lower Ohio. Prof. Fernald tells us that this variety is "common at Orono." May it not be regarded as a peculiarly northern form?

Amphion Nessus, Cram.

I have taken this species on several occasions at light, and it flies most commonly at dusk in these latitudes. If found flying in the middle of the day, I have noticed that it always keeps in the shadow, or slyly hovers about among the thick masses of the *Syringa* blossoms, in the deep umbrageous recesses, where it is not easily reached by the net of the collector.

Daremma Undulosa, Walker.

The larva of this species feeds occasionally upon the white oak and the red oak.

Sphinx Oreodaphne, H. Edw.

I have a specimen of this insect, taken by Mr. James Behrens, and

kindly determined by Mr. H. Edwards, which I am altogether unable to distinguish from small specimens of *Sphinx Chersis* taken in the vicinity of Pittsburgh, at Orono, Me., and various other localities in the United States. The Brooklyn Check List in making *Oreodaphne* a variety of *Chersis*, hardly goes far enough. It seems to me there can be no harm done to science by making *Oreodaphne* a synonym for *Chersis*.

Sphinx Vancouverensis, H. Edw.

I have a specimen of this form, bred by Mr. Behrens and determined by Mr. H. Edwards. It is a male. If taken in Allegheny County it would be unhesitatingly pronounced to be *Sphinx Drupiferarum*, Ab. & S. Mr. Grote, in his Check List of 1882, gives *Vashti*, Strecker, as a synonym for *Vancouverensis*. A comparison of Strecker's figure in Lep., Rhopal. & Heteroceres, pl. xv., fig. 4, with the specimen before me, indicates considerable difference. In my mind it is very doubtful whether *Vashti* is correctly regarded as a synonym for *Vancouverensis*, while it seems clear to me that *Vancouverensis* is a synonym for *Drupiferarum*, if my specimen determined by the author of the species is an index.

Dolba Hylaeus, Drury.

This moth is exceedingly common in Southern Indiana, where the larva feeds on the *Asimina triloba*, or Pawpaw. I have taken as many as ten larvæ from a small Pawpaw bush.

Dilophonota Ello, Linn. The description of the preliminary stages of this species given by Prof. Fernald is evidently founded upon Boisduval, who derives it from a figure given by Madame Merian on the sixty-first plate of her work, which Boisduval supposes was intended to represent the larvæ of *Ello*. The description is exceedingly defective, and in the interest of more exact knowledge I shall venture to give one founded upon a series of beautifully prepared larvæ obtained from my valued correspondent, Dr. Wittfeld, who accompanied the specimens with a number of interesting MS. notes.

Egg.—"Dark green; deposited on the under side of the leaves of the food plant, which is *Euphorbia heterophylla*." (Wittfeld).

Larva.—The larva presents again the phenomenon of dimorphism, or rather of dichromatism, alluded to in the foregoing note upon *H. Tenuis*. A part of each larval brood is green from the time of the first moult, and a part remains of a purplish brown color, the color of the newly hatched larvæ.

Green Variety.—The head is round and marked on either side by a dark brown line running from the insertion of the palpi to the vertex, and continuing along the dorsal aspect of each segment, gradually diverging until the fourth segment, then continuing parallel until they suddenly converge at the base of the caudal horn. These dark lines are bordered externally by light yellow, shading off into the darker green of the sides and ventral surface of the larva. The space upon the back of the larva enclosed by these lines is delicately sprinkled with dark brown and light yellow spots, the ground color being apple-green, save in the three anterior segments. These segments are of a light olive green between the lines, and are ornamented by a median line of dark brown or black, running from the vertex of the head to the third segment, where it is lost in a large circular black spot, margined externally by bright yellow, outside of which on either side is a shade of deep reddish brown, of a lunular form. The sides of the larva are faintly mottled in the same manner as the back and are further ornamented by small white blotches, disposed one upon each segment just posterior to its junction with the preceding segment, and on a line with the spiracles.

The legs are yellow, annulated with black, the prolegs are black, bordered at their juncture with the segments with yellow, and having the circlet also yellow. The caudal horn is very short and blunt, and distinctly four angled. In one specimen it is almost obsolete.

Brown Variety.—The brown variety does not differ from the green save in color, and the consequent obscuration of the dark lines and markings, which appear less distinct upon the darker ground, and the heightening of the effect of the light spots which come out into bold relief upon the darker surface.

The mature larva is from three to three and a half inches in length and about one-half of an inch in diameter.

The larva pupates near the surface under fallen leaves. The pupa is dark brown. The imago emerges in from fourteen to fifteen days.

The insect is very common in Eastern Florida. I have specimens also from the Antilles, Central America, Trinidad, and Brazil.

Everyx Versicolor, Harris.

The larva of this beautiful moth is found in Western Pennsylvania upon the wild Hydrangea, *Hydrangea arborescens*, which abounds in the deep ravines near streams of running water. The larvæ are either green

or pinkish brown, the brown ones being as numerous as the green. They are peculiarly liable to the attack of parasites, and out of nearly fifty specimens secured in 1884, only nine or ten came to maturity as perfect moths. The rest fell a prey to a species of *Pezomachus*.

Triptogon Occidentalis, Hy. Edwards.

This is a western variety of *T. Modesta*, Harr., differing from the type-form simply in being generally larger in size and paler in color. *Modesta* is found in Western Pennsylvania, Ohio, and Southern Indiana. The examples of *Modesta* from S. Indiana are hardly to be distinguished from specimens of *Occidentalis* from Colorado.

Cressonia Juglandis, Ab. & S.

The larva of this species is commonly found in Western Pennsylvania and Southern Indiana.

PREPARATORY STAGES OF TETRACIS TRIANGULIFERATA,
PACK.

BY G. H. FRENCH, CARBONDALE, ILL.

Egg.—Elongate or oval, .03 of an inch long by .025 of an inch wide, ribbed longitudinally like a muskmelon by about 15 ribs; color pale yellowish green. Duration of this period 8 days.

Young Larva.—Length .10 of an inch; cylindrical, with 10 legs; grayish white, without marks except a bright scarlet transverse line across the posterior part of joint 2, jaws the same color, legs concolorous, the six thoracic slightly pink tinted. Duration of this period 6 to 7 days.

After First Molt.—Length .30 of an inch; shape as before; dorsum dark purplish gray, paler in some; on each side a row of five short streaks, slightly lunate, bordered outside with paler, those at the incisures between the joints pale, on each side of joints 8 and 9 a blackish purple patch, the first the largest; venter with one pale and two dark stripes and some spots; head as before. Some examples have the dorsum pale green with a gray shading. Duration of this period 5 days.

After Second Molt.—Length .50 of an inch; cylindrical, near the posterior part of each of joints 6 to 10 are four slight elevations in a

transverse row, those on joint 8 tubercular, the rest small, color vandyke brown, each supporting a minute hair. Color brown, pale on the dorsum of all the joints but 5 and 6, but dark back of the elevations; the sides of the joints from 8 back with more or less vandyke brown patches situated on each side of a dorsal line of dark brown; traces of a stigmatal and subdorsal whitish line; general color of sides and venter yellowish brown, the latter with two broken vandyke brown lines; head brownish, of a honey cast. There is not so much difference in shade as during the former period, traces of subdorsal white lines. Seventeen days after this moults the larvæ began to spin leaves together for their cocoons, without my noting whether they moulted once or twice more.

Mature Larva.—Length 1.50 inches; width of head .06 inch, of middle of joint 7, .10 inch, of posterior part of joint 7 over row of tubercles .16 inch, the width of enlarged portion of succeeding joints .14 inch. Slender, tapering slightly from the head back; head rather flat, the posterior part not higher than the anterior part of joint 2; joint 7 enlarged near its posterior part, where it bears four tubercles; joint 8 enlarged posteriorly, but the tubercles are very small; on joint 9 the two dorsal tubercles a little larger; tubercles on joints 10 and 11 scarcely perceptible, but the two dorsal tubercles on joint 12 prominent. Color yellowish brown, in some places amounting to brownish yellow, marked with umber and blackish or vandyke brown. Head and joint 2 slightly reddish brown; joint 3 yellowish brown with a dorsal brown V on its posterior part; joints 4, 5 and 6 of a little darker shade, the V not so distinct and followed by a brown patch that coalesces with it, more or less of a distinct subdorsal whitish streak; joint 7 with an oblong brown patch back of each dorsal tubercle, a vandyke brown patch on each side mottled with yellowish; within this patch is situated the lateral tubercle; joints 9 and 10 the same as 7, the vandyke brown extending down on the legs; some vandyke brown on joint 11; there is a sub-obsolete dorsal dark line, and all the joints are more or less mottled with brown. Venter with rather distinct stripes, the central one pale, all formed by a mottling of yellowish white and dark, the dark part lighter on the pale stripe than on the others, the white forming an irregular line on each side of this.

Chrysalis.—Length .65 inch, wing and antennæ cases .40 inch, reaching to posterior part of joint 5, cylindrical; depth through joint 1, .15 inch, through joint 4, .18 inch, through joint 5, .17 inch, from this tapering to crenaster; not depressed on joint 1, but gradually tapering from

joint 4 forward, and from this point more rapidly backward; head rounded; tongue and antennæ case extending a little further back than the wing cases. Color pale yellowish brown, faintly mottled with dark reddish brown; a double dorsal row, a pair to each joint, of dark brown patches; a lateral row of the same at the edge of the wing cases on joints 2 to 5; a single ventral row from joint 6 back, and smaller patches scattered over the ventral surface. The wing, tongue and antennæ cases are darker, the ground color slightly darker and the mottlings thicker, so as to be nearly uniform dark purplish brown. Duration of this period from 249 to 282 days.

The eggs producing the larvæ from which this description was taken were obtained from Mr. C. F. McGlashan, Truckee, Cal. The eggs were deposited June 19, 1885, hatching June 25. They began to spin leaves together July 21st, the imagines, three in number, being produced March 27th, April 18th and 29th, 1886, respectively, giving pupal periods of 249, 271 and 282 days, or giving 286, 308 and 319 days from the time the eggs were deposited to the perfect insects. There is a possibility that in this latitude there would be a second brood with a short pupal period, but probably in its home in the Sierras the imagines are produced much later than here, and that there is only one brood.

While in confinement they ate Missouri or Golden Currant (*Ribes Aureum*). In pupating a few leaves were fastened together within which was a button of silk to which the crenaster was fastened.

NOTE ON CERTAIN SPECIES OF THE GENUS ARCTIA.

BY A. R. GROTE, A. M., BREMEN, GERMANY.

It is only comparatively recently that I have seen the article of Mr. B. Neumoegen upon the genus *Arctia* and its variations, contained in *Papilio*, vol. 3, p. 148. So far as my own experience and conclusions go, I am, except in two instances which I notice here, generally agreed with the views of this writer. Especially am I of opinion that recently there has been an unscientific and unsound attempt to class as one species

forms of Lepidoptera quite different in appearance, upon insufficient evidence. I have formerly pointed out that Entomologists are naturally divided into two camps: the "lumpers" and the "splitters." For my part I do not at all object to present species being thrown together as varieties, *provided the evidence is complete that they are inter-dependent forms*. What I object to is the hasty manner in which the most of the *lumping* is accomplished in some recent articles, such as Dr. Hagen's on *Papilio* and Mr. Hulst's on *Arctia*. Really if this sort of thing is to go on, we had better stop studying species altogether, considering all the various forms belonging to any one genus as mere varieties of each other, and dispense with naming them. But, since progress is indisputable in all matters, I fancy that in most cases this lumping mania is only the result of the discovery of the extreme variability of certain species and the jumping at the conclusion that it is so with certain other species as to which the necessary proof is as yet wanting. Certain forms described as species of *Arctia* are shown to be varieties, and Mr. Hulst is not satisfied but that *A. Persephone* must be a yellow *A. Virgo* or *A. Saundersii*. It has been one of the beliefs of the Brooklyn Entomologists that *Persephone* was a var. of *Virgo*, because my old friend Mr. Graef had a *Virgo* with yellow secondaries in his collection. The two cases in which I disagree with Mr. Neumoegen's list of the species of *Arctia* are as follows:

ARCTIA MICHABO Gr.

This is set down as an aberration of *A. Arge*, which in my opinion is a mistake. At the time I described *A. Michabo*, all authors had followed Dr. Harris in considering *A. Dione* and *A. Arge* as simple synonyms. No one knew of a second species allied to our Northern *A. Arge*, to be separated as a Southern form under the name of *Dione* Ab. & Sm. Therefore it is possible that my species, described very fully in the CANADIAN ENTOMOLOGIST, vol. vii., p. 196, is = this *Dione*, which Mr. Neumoegen now asserts to be different from *Arge*. I cannot compare Abbot & Smith at present. But my *Michabo* is from Nebraska, where Mr. Dodge has reared it and found it entirely different from *Arge*, in a series of specimens. When I read Mr. Neumoegen's paper I at once remembered that I gave him the specimen described by me as a variety or aberration of *Arge* in the same paper above cited, and collected by Mr. Robinson at Brewsters. This is an *undoubted* aberration of *Arge*, and it occurred to me that Mr. Neumoegen has mistaken this aberration of *Arge* for my

Michabo. (By the way, if students would only take the trouble to refer to back numbers of the CAN. ENT., as well as other American publications, some articles would not be necessary; it is some excuse if the older illustrated works are not at hand, or foreign books, but none if American publications issued within the last 20 years are not gone over by new students). I must therefore strongly protest against *Arctia Michabo* being cited as an aberration of *A. Arge*, while I leave its relationship to *A. Dione* to be settled by those in the possession of the necessary material. In the meantime *A. Michabo* must be considered a good species, being larger than *A. Arge*, and nearer *A. Virgo*. Mr. Dodge will no doubt be able to furnish material to bear out my views. The unnamed aberration of *Arge* which I gave Mr. Neumoegen differs from the typical form in the fore wings being black, the veins alone broadly flesh color, so that the moth has something the look of a species of *Seirarctia*.

ARCTIA NEVADENSIS G. & R.

This species I refer to merely to state that if Mr. Hy. Edwards' *Incorrupta* is a form of the same species, even if more "typical," the above name, being much the oldest, must stand for the whole species, and our designation used only for the variety. When species are first collected it does not usually happen that they are brought in such quantities that in so variable a genus as *Arctia* the "ground form" can be ascertained and described. But it is positively certain that whether the first description cover the more usual or commoner form or not, the name so proposed *must stand for the whole species*, in future and when its limits are more accurately known. Any other course would be manifestly unjust and cause confusion. The species should therefore stand as *A. Nevadensis* G. & R., with its varieties *A. Ochracea* Neum., and *A. Incorrupta* Hy. Edw., as well as *A. Nevadensis* G. & R., for the special form illustrated by us, although I could see no strong differences. Upon one or two other points suggested by Mr. Neumoegen's paper, I could say a word, but the whole genus will soon be better known, and these minor points may well wait.

But I may conclude these remarks with a general observation on the species of *Arctia* described by myself from time to time during the past twenty-five years, since the genus contains very variable species and my own have been subject to frequent criticism.

The forms of *Arctia* which I have described (and for the most part figured) as distinct species are: *A. Saundersii*, *Persephone*, *Anna*, *Blakei*, *Nevadensis*, *Mexicana*, *Achaia*, *Michabo*. Assuming that I am correct in my present paper, that Mr. Neumoegen has wrongly identified *Michabo*, then these are all good species except *Anna*, which Mr. Neumoegen considers a black variety of my *Persephone*. In this, which has been before suggested, I believe the author is correct, since we have other black and yellow Arctians (and other moths) which vary in a similar fashion. I have never had sufficient material to determine the question; have never seen but one ♀ *Persephone*, which shared the ornamentation of the ♂. Consequently *Anna* may be a ♀ dimorphic variety. The stripes on fore wings are however narrower and paler also, as they seemed to me, hence my doubts. Added to this, the form *Anna* was first discovered by me, before I described the "ground form" *Persephone*. Other two forms of *Arctia* I have described, suspecting them at the time not to constitute distinct species, viz., *Stretchii* and *Snowi*. The first of these, differing only by the basal band of fore wings from *Intermedia*, is without doubt a variety, as Mr. Neumoegen treats it, and I was wrong in cataloguing it as distinct; I do not know, however, the differences between *Intermedia* and *Saundersii*. He considers *Snowi* as distinct from *Figurata* or *Decorata*, and in the absence of further evidence this is the correct course to pursue. In the face of the fact that the larvæ are not all known, we should not be hasty in drawing in forms of *Arctia*, which yet may prove to be only varieties. If we have finally to separate these again, it makes unnecessary confusion. When two forms exhibit such differences as are usually of a specific character, we are warranted in treating them as such, until proof is forthcoming showing them to be mere varieties. Breeding from the egg is the only sure way. On p. 7, Bull. Br. Ent. Soc., Mr. Hulst brings together four species of *Catocala*, with the naive remark: "As may be imagined from the above, this (*C. polygama*) is a very variable species"! And this Mr. Hulst did in face of the fact that of two of the forms, *C. polygama* Guen., and *C. crataegi* Saund., the larvæ were known and described quite differently.

NATURAL HISTORY NOTES ON COLEOPTERA.

No. 2.

BY JOHN HAMILTON, M. D., ALLEGHENY, PA.

Harpalus viduus Lec. The type of this species was taken at Rock Island, Illinois. It must be somewhat rare, as it does not appear in any local catalogue nor exchange list under my notice. Here it is found in one place only, and that in some abundance—on the side of a high hill in its primitive state, possessed of a warm, friable, vegetable soil, with a scanty vegetation, and flat stones on the surface. The females have the elytra opaque, but not pubescent, as one of my correspondents claims they should be to meet the description of Dr. Leconte—"sericeo-opaca," which here evidently means opaque with a silky lustre. The males are moderately shining. The beetle makes its appearance during September and October, though few of them mature till the following spring, remaining under the shelter of the stones, where from one to half a dozen are often associated. At first the beetles are of a pale color, the elytra gradually changing to black; but the head and thorax mostly remain red till winter. In the spring they are shining black, and are only then fit to be placed in a collection. In the great struggle for "survival of the fittest" the chances seem to be against this insect.

Quedius fulgidus Fab. The descriptive synopsis of the species of this genus by Dr. Horn is so lucid that anyone with a little practice should be able to separate them without trouble, but in some individuals the departure from the normal form is so great and the approach to some other form so close as occasionally to produce perplexity. In the present species, as will be seen by reference to the synopsis cited, the color is so very variable as to be of no separative value, and the principal characters to be depended on to distinguish it from *peregrinus* Grav., which is equally variable, are the shorter, broader head, and the series of three punctures on the thorax external to the discal series. The form with the elytra red is the more common, and usually has the full number of punctures; but a totally black form occurs (legs brown), with the external series often reduced to two, or to the marginal puncture alone, and with the head considerably elongated, thus approximating it closely to black forms of *peregrinus*. When one has a number of both species of normal form to compare with, the determination of these abnormalities can be

made on the general fascies. The length of the antennæ is also of some use, being longer in *peregrinus*, but the relative length of the first and second joints is not permanent enough to be of value. *Fulgidus* is taken more commonly in autumn in and about decomposing vegetable matter. *Peregrinus* abounds all summer everywhere, and is quite arboreal and predaceous.

Dynastes tityus Lin. A gentleman sent me an immature living male and female of this species. They were taken in Clairborne County, Tennessee, early in December, from the decayed wood and humus that filled the cavity of a large yellow poplar, at the cutting down of which he was present. He writes, "there were a great many of them; they were all encased in oblong cases about three to four inches long and three inches in diameter, composed of the rotted wood in which they were imbedded; they were all soft and white; none of the natives had ever seen anything like them." Unfortunately he sent me none of the cases. When received, about three weeks after being taken, the male was assuming the greenish hue, and in three weeks more was normally colored. The female was entirely brown, and in four weeks had changed to nearly black; the black then began to fade, and in about four weeks more the beetle had taken on the greenish tint with the usual brown maculæ. No further change in color has occurred till the present, April 6th. It may be possible that the brown males and females mentioned by writers are immature individuals, as it would appear from the above that it requires from two to three months to perfect the colors. While no real stridulating organs are present, they have the power to produce a sound that may answer the same purpose, somewhat resembling that of an angry goose. The pygidium and part of the last ~~ventral~~ ^{dorsal} segment are very hairy, and by withdrawing the abdomen from the elytra so as to admit air, and then suddenly forcing it out through the hair by a sudden extension, a noise is produced that is rather alarming to one unacquainted with their harmlessness.

Prionus imbricornis Lin. Nov. 15th, 1884, I found a larva that in time produced this beetle. As it measured over three inches in length when at rest, it must have been nearly full grown; the skin was luteous and of a tough leathery consistence. It was about ten inches below the surface of the ground at the side of a large stone which it had struck in its subterraneous travels. The stone and the larva were carefully replaced

in their original positions. The first week in the following July I visited the place prepared to search for it, and soon found the course it had taken, and by carefully tracing for about eighteen inches, it was at length found inclosed in a cell of tough material, seemingly humus and leafy debris cemented by some secretion of its own. It made quite a large tunnel, eating the roots of the grass that formed a thick sod overhead, and built its cell about three inches below the surface. It was in a meadow, and there were no trees nor stumps near. I brought it home, being careful to not break the cell, and it shortly developed an average sized female *imbricornis*. From this it seems that some of the larvæ of this species of *Prionus*, like those of several *Elateride* species, bore through the earth, feeding on the roots of such grasses and plants as they fancy, which is confirmatory of the observations of Mr. C. V. Riley on the habits of a smaller form, considered a variety of this, that occurs abundantly on the treeless prairies of Illinois and other western States (Missouri Reports 2, p. 89). At the same time it is well established that other larvæ of this species live in both the living and the dead roots of trees, thus showing a large latitude of habit.

Clytanthus albofasciatus Lap. Is raised both from grape vines and from hickory limbs. There are two color forms produced indiscriminately that are so different in appearance that judged by color alone would form two species. The one is entirely black, with the usual anterior and posterior white bands on the elytra; the other is black with the antennæ brown; the part of the elytra anterior to the posterior white band, the femora, the coxal part of the prosternum, the meso and metasternum, rufous. This is exactly the color of the more plentiful form of *Cyrtophorus verrucosus*, and it is not difficult to confuse them. They may be readily distinguished by the compressed thorax and the spines of the antennal joints of the latter, as pointed out to me by Dr. Horn. The same color variation occurs in *Psenocerus supernotatus*. A few specimens of which taken on the wild gooseberry were entirely black, except the usual white markings on the elytra, and so different is the appearance that it required close attention to other characters to be convinced that they were the same species.

Physonata unipunctata Say. Mr. Caulfield, in the March number of the ENTOMOLOGIST, gives a very good account of the form *P. 5-punctata*. Those finding *unipunctata* would do good by making known its food

plant, and if they do not know it, if a sample is sent to me (in bloom if so found), I will be pleased to determine it. It seems to me that it is desirable to have them in collections as varieties, if not species. Besides color, there are two or three structural differences that appear sufficiently permanent to effect this. The black thoracic spot of *unipunctata* is elongate and divided longitudinally by a deep, acute incision; anterior to this is a transverse arcuate impression with the convexity posterior, and more or less apparent; in front of this impression the sides of the thorax have the appearance of having been pinched, so that the dorsal line seems somewhat roundly carinate to the thin apical margin. In *5-punctata* this spot is larger and more broadly oval; in some individuals there is a very shallow depression, while in others it is not observable; anterior to this the thorax is full and convex, without the compressed appearance of the other, and there is no trace of the arcuate impression.

Smycronyx griseus Lec. is often called for, though excessively abundant everywhere, occurring in August and September on the rag-weed of the fields (*Ambrosia artemisiifolia*). At first the elytra are clothed with gray pubescence finely mottled with closely placed, minute whitish spots, and the thorax has four pale vittæ; but with age all these mostly disappear, the gray alone remaining. This is the species recognized as *griseus*, though the second joint of the antennæ is scarcely shorter than the first, and nearly twice as long as the third, not agreeing in this with Dr. Leconte's description in the Synopsis. *Brachytarsus tomentosus* is often found plentifully with it, and it may be well to remember that both species may be beaten from the trees and bushes bordering fields in which the weed grows.

Smycronyx tychoides Lec. Is found during August with *Barytychius amœnus*, on a variety of the great ragweed, *Ambrosia integrifolia*, though neither are so abundant as the preceding species. While belonging to different genera, it requires close inspection to separate them if rubbed, or old: *B. amœnus* has the sides of the thorax much rounded in posteriorly, and the disk as well as that of the elytra roundly depressed from the middle to base, which is much below the plane of the disks at middle: while in *S. tychoides* the bases are nearly on the same plane, though the thorax is as much rounded at the sides. The vestiture is of patterns about equally divided among the individuals. The one has a common sutural stripe blackish brown, the rest of the elytra being more or less rufous, and is

easily known ; the other is gray with indeterminate whitish, and requires care to distinguish it ; the most certain mark being the granular punctuation at the sides of the thorax, no other species that resembles it having this form of punctuation. Very few of the species of this genus can be satisfactorily determined from the Synopsis, and to Dr. Horn I am indebted for rendering the identity of the ones treated of certain.

Magdalis Lecontei Horn. The original describer gives its distribution as from Kansas to California and Oregon. To it has been referred a blue or blackish green species, much smaller (.15 to .18 inch.) found here, and of which I have specimens from Eastern Pennsylvania and Canada. While agreeing in having simple claws, non-serrate thorax and dentate femora, a comparison of the two forms shows them to be different. The western form has the ^{base} back longer and more polished, the thorax more finely punctured, the elytral striæ finer, flat, the intervals broad, finely transversely rugulose with a very distinct row of punctures down the centre of each ; (length, .20 to .25 inch.) The other has the striæ wider and more coarsely punctured, the intervals semi-convex, narrow, coarsely rugose, and the row of punctures nearly obsolete.

Another form with blue elytra occurs on spruce, of which I have seen but one specimen taken here. The thorax is canaliculate and the hind angles more explanate than in *Lecontei*.

A quick method of cleaning greasy Coleoptera, etc. Lately I have employed the following method with the happiest results. It may be old and well known, but I do not remember to have seen it suggested. Dip the insect one half to one minute in spirits of ammonia (Liquor ammoniæ), wash in water (the hotter the better), and the thing is done. Offensive beetles like *Trox*, *Silpha*, etc., can be cleaned and purified instantly. How far the ammonia may be employed in cleaning Lepidoptera and other insects I do not know, but it renewed the beauty of two very greasy specimens of *Cossus Centerensis*.

This liquid also dissolves the verdigris that forms on the pins passed through insects ; but the insect must remain longer in the ammonia and be more carefully washed.

A LIST OF HEMIPTERA HETEROPTERA COLLECTED IN
SOUTH LOUISIANA.

BY C. H. T. TOWNSEND, CONSTANTINE, MICH.

Now that we have been supplied by Mr. Uhler with a list of the Hemiptera Heteroptera of North America, which has been much needed, it will be interesting to know more about the geographical distribution of the species. The following list is short, but will nevertheless add to our knowledge of these insects. The species were collected at the same time and in the same localities with the Coleoptera given in my list (CAN. ENTOM., xvii., p. 66-73), and the preliminary notes there given apply also here. The species were kindly determined for me by Mr. Uhler.

PENTATOMIDÆ.

Mineus bioculatus Fab. One specimen taken on plants.*

Podisus sp. The nymphs of two species of *Podisus* were taken on wild plants; one black and reddish, and three smaller of a greenish color.

Euthyrhynchus floridanus Linn. One taken 25th May on plants along the wild side of a ditch, on the edge of a plantation. B. la F.

Oebalus typhæus Fab. Two taken on plants. This species is not given in the Check List.

Euschistus sp. Two nymphs were taken on plants; they are probably two different species, though they look much alike.

Proxys punctulatus Pal. Beauv. Twenty taken, nearly all on 29th March, under dry logs near Lake Pontchartrain, at Milneburg.

Nezara viridula Linn. Two imagoes taken 2nd June on plants, and one nymph at another time. B. la F.

Nezara hilaris Say. One nymph taken on plants.

Edessa bifida Say. One taken about first of June, I think, on wild plants. B. la F.

COREIDÆ.

Metopodius granulatus Dallas. Numbers taken on thistles and other plants along ditches on plantations, and in other open sunny places. N. O.; B. la F. This is probably not the species so

* Where no locality is given it may be either, but is probably B. la F. Where no date, it is unknown, unless the species was more or less abundant during my stay.

often mentioned and figured in agricultural reports (first by Glover, U. S. Agr. Rep., 1855, p. 95, pl. viii., fig. 9) as *M. femoratus*, but it is nevertheless found in just such situations as are given for the latter, and is the only species I met with in the South. The locality of this species is given in the Check List as the Western States.

Leptoglossus phyllopus Linn. Numbers taken on thistles and in much the same places as the preceding. N. O. ; B. la F.

LYGAEIDÆ.

Myodocha serripes Oliv. One taken under old wood?

Melanocoryphus bicrucis Say. Four taken on plants in May. B. la F.
This species I have also taken in Kansas and Michigan.

PYRRHOCORIDÆ.

Largus succinctus Linn. Fifteen taken in April on leaves of young shrubs of elder on a plantation. *In coitu*, 21st April. B. la F. This is no doubt the species referred to and figured by Glover (U. S. Agr. Rep., 1855, p. 94, pl. viii., fig. 7) as the "Red-edged-winged Reduvius," as his description applies well to this insect.

PHYMATIDÆ.

Phymata crosa H. Schf. Three taken on some roadside weeds in May. B. la F. The locality of this species was formerly given as Mexico.

REDUVIDÆ.

Zelus bilobus Say. One taken 22nd May on ragweed. B. la F.

Apiomerus sp. A larva taken under old wood?

Sirthena carinata Fab. Three taken in April under logs in damp places on the edge of the swamp. N. O.

Rasahus biguttatus Say. Four nymphs taken in April under logs in same places as the preceding species. N. O. ; B. la F. The locality of this species was formerly given as the Western States.

Melanolestes picipes H. Schf. Six taken in April in same places with the two preceding. N. O. Have also taken this species in Kansas.

Conorhinus variegatus Drury. One nymph taken with the preceding species. N. O.

GALGULIDÆ.

Galgulus oculatus Fab. One taken in slow water in April. N. O.

BELOSTOMATIDÆ.

Zaitha sp. Three taken 17th April in slow water; another was taken also, which was being devoured by a specimen of *Cybister fimbriolatus* Say, all the under part of the abdomen having been eaten away. N. O.

Belostoma americanum Leidy. This species has been noticed by Mr. L. O. Howard (Ent. Amer., I, p. 54) as very abundant in New Orleans, being attracted to the electric lights. I have also referred to this fact in a note in No. 8 of Vol. I. of the same journal.

PARTIAL PREPARATORY STAGES OF APATELA
LOBELLÆ, GUEN.

BY G. H. FRENCH, CARBONDALE, ILL.

Found feeding on a wild cherry, September 19, 1884, two larvæ of this species. They were .80 of an inch long, nearly cylindrical, the body somewhat elevated in the middle, from which it tapers a little both ways, the dorsum of joint 12 with a slight elevation; eight low tubercles on each joint, from each of which arise a few spreading white hairs. Color green; a dorsal stripe that is mostly red on joints 3 and 4, and on the elevated portion of joint 12, the rest of the stripe yellow with a reddish blotch to each joint; the anterior part of dorsum of joint 2 red, separated by green in the middle, yellowish round the edges. Head slightly bilobed; the lower part reddish green, the upper part more red.

September 24th, they moulted when they were 1. inch long, the same shape as before. Color dark blackish brown, with a magenta dorsal line bordered each side with black, and a patch of the same color on the top of each lobe of the head. The dorsum of joint 2 is pale instead of magenta. Each joint has twelve small orange tubercles, each supporting a spreading tuft of gray hairs. They pupated October 1st, producing two imagines May 10th and May 19th, 1885. These are interesting larvæ in both of their last larval stages, as the colors are bright. The cherry upon which they fed is the common wild black cherry, *Prunus serotina*, the larvæ resting when found on the upper side of the leaf.

OBITUARY.

We deeply regret to announce the death of Mr. William D. Shaw, of Montreal, on the 29th of June, 1886, at the early age of 19 years. The deceased was well known for his early application to science, he having been the leading spirit in founding the Montreal Chapter of the Agassiz Association. Of this Chapter Mr. Shaw was Secretary and Treasurer, and in 1885 was appointed General Secretary for Canada. Mr. Shaw was also a member of the Council of the Montreal Branch of the Entomological Society of Ontario, a member of the Natural History Society of Montreal, and a member of the Astro-Meteorological Association. A devoted student of science, his loss will be deeply felt by his fellow workers. Unassuming, guileless and upright, his memory will ever be held in loving remembrance by those who had the privilege of knowing him.

CORRESPONDENCE.

ON EXPLOSIVE EMISSIONS FROM CARABIDÆ.

Dear Sir: There are other Carabidæ in our fauna which make an explosive emission from anal glands besides *Brachynus*. Mr. Ricksecker has observed the same in *Metrius*, and while I have taken these, I have never been so fortunate as to observe that act. The same is, however, done by *Psydrus piceus*. Many of our Carabide genera emit forcibly an irritating liquid, decidedly acid in its reaction, but without any explosive noise or with visible vapor; among these are *Cychnus*, *Calosoma*, *Carabus*, *Nomius* and *Chlaenius*. It is possible that *Calathus* does the same, as stated by Mr. Townsend, but the "white smoke" observed is probably the result of a chemical combination between the vapors in the cyanide bottle and the acid exudation, similar to that noticed when the vapors of hydrochloric acid and ammonia meet. Many of these exudations are not unpleasant to the smell, but in *Nomius* the offensiveness of the odor is entirely disproportionate to the size of the insect.

Philadelphia, April 28, 1886.

GEORGE H. HORN, M. D.

A CORRECTION.

Dear Sir: I described in the CANADIAN ENTOMOLOGIST, June, 1885, vol. xvii., p. 115, a new Ichneumonid for which I created the new genus *Platysoma*. But advised by my friend, Mr. E. T. Cresson, I recognized that this name was pre-occupied for a Coleopterous insect of the family Histeridæ. I propose in consequence to change this name in that of *Aplomerus* (from *aplous* simple, and *meros* thigh). Thus, *Platysoma tibialis* must be read *Aplomerus tibialis* Prov.

Cap Rouge, April 15th, 1886.

L. PROVANCHER.

BOOK NOTICE.

The Butterflies of the Eastern United States: By G. H. French, A. M.

This book is indicative of the progress lately made in Zoology, and particularly in Entomology, in that such work is possible, and that it is appreciated. In a plain, simple, and still complete and thorough way, it presents the facts known about a large and distinct group of living objects, which attract the interested attention of every lover and student of nature. The first question which a student asks of a newly found object is, "What is it?" If the object comes within the scope of this volume, this question will be answered easily and satisfactorily. The work has been done carefully and well. The writer has shown his good judgment quite as much in what he has left out, as in what he has put in his book. He has wisely accepted the work which the great body of Entomologists has done before him. He has not felt that a woe rested upon him if he failed to revise, which commonly means to ignore all such work. He has not tried to create a chaos and call it science. He has evidently preferred to present the facts of his subject, rather than to display himself. For what he has done, and for what he has omitted to do, he deserves thanks. The volume is well printed, and its many illustrations, though in many cases familiar, are still the best extant. While we recognize their abundance, we still wish there were more, and hope that it will at some time be possible to figure in such a book every species mentioned. We trust that this work will be followed by others equally meritorious in every division of the wide Entomological field.

S. H. PEABODY.

